

Tolt River Corridor Draft Capital Investment Strategy Public Meeting

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**Department of Natural Resources and Parks
Water and Land Resources Division
River and Floodplain Management Section**



King County



**KING COUNTY
FLOOD CONTROL
DISTRICT**

Tonight We'll Talk About

Planning Update and Key Problem Areas

- Corridor planning goals and update
- Existing conditions and problem areas
- Potential tools

Draft Capital Investment Strategy

- Overview
- Efforts underway
- Potential solutions

Next Steps



January 2015

Tolt Corridor Planning Goals

- **Reduce risks from flood and channel migration hazards**
- **Reduce long-term costs of flood hazard management**
- **Incorporate stakeholder and community input into the corridor planning process**
- **Improve salmonid habitat and restore natural river processes**

Adopted by King County Flood Control District (March 2015)

Tolt Corridor Planning Process



Existing Conditions
and Potential Tools

Public Input



Identified
Problem Areas

TOLT RIVER CORRIDOR CAPITAL INVESTMENT STRATEGY			
			DRAFT
<p>The Tolt River basin drains 100 square miles, with headwaters in the Cascade Mountains. The lower six miles of the river flows through rural residential areas and the City of Carnation. Nearly continuous levees border the river along the lower two miles as it passes through Carnation. Upstream of this leveed reach, the river is largely unconstrained with significant channel migration and deep and fast flows. The lower Tolt River is also high priority for habitat restoration for ESA-listed salmon.</p> <p>Summary of Risk: Under existing conditions, for a 100-year flood event, the following risks are present:</p> <ul style="list-style-type: none"> • 32 residences inundated • 64 homes isolated by road flooding • 21 residences subject to deep/fast flows • 2 miles public roadway inundated <p>Summary of Risk Reduction Strategy: Below is a draft sequenced action plan for implementing risk reduction efforts in the Tolt River Corridor. The project sequence reflects current information on urgency, severity, consequence, responsibility or authority, and funding or partnership opportunities.</p> <p>The current adopted 2016-2021 King County Flood Control District (FCF) CIP budget includes:</p> <ul style="list-style-type: none"> • \$1.0M for Tolt levee repairs • \$1.0M for Snoqualmie Trail Bridge to SR203 acquisitions • \$1.7M for San Souci acquisitions, road elevation, and rewetment removal • \$2.9M for Natural Area acquisitions • \$8.2M for Tolt Corridor Implementation (specific projects TBD) <p>NOTE: "Other" funding includes state, federal and county funding sources.</p>			
PROJECT	PROBLEM	APPROACH	COST ESTIMATES
Efforts Underway			
<i>(Funded Projects - 2016 CIP)</i>			
A. Tolt River Levee	Erosion damage to Lower Free, Upper Free, Remington, and Girl Scout levees	Monitor, design, and construct repairs if erosion begins to threaten levee integrity at any of four sites.	TOTAL \$1.0M FCF: \$1.0M
B. Snoqualmie Trail Bridge to SR203 Bridge Property Acquisitions	Levees overlap or breach, inundating or damaging homes, roads (including SR203), and land proposed for development.	Acquire two remaining at-risk residences and vacant acreage to reduce risk and allow for future levee setbacks on both river banks.	TOTAL \$1.0M FCF: \$1.0M
C. San Souci Reach Improvements and Road Elevation	San Souci reach threatened by lateral erosion, avulsion, flooding and levee failure; Tolt River Rd NE overlaps at 2-year flood resulting in 40 homes.	Combine 3 projects: 1) acquire three remaining at-risk residences; 2) feasibility and design to remove illegal rewetment, roads in San Souci neighborhood; 3) feasibility for elevation of Tolt River Road NE.	TOTAL \$2.26M FCF: \$1.68M OTHER: \$580K
D. Tolt Natural Area Property Acquisitions	Multiple properties at risk in high flood hazard areas, including illegal erosion, avulsion, and potential levee breach.	Acquire 9 remaining at-risk residences (BROOK NOTE: need to reallocate approximately \$400K to 2017 from out years).	TOTAL \$4.0M FCF: \$2.9M OTHER: \$1.1M
Proposed Near Term Actions for 6-year CIP			
<i>(Unfunded Projects - \$8.2M current placeholder)</i>			
E. Lower Free Levee Setback Design and Construction (Phases 1 and 2)	Levee overlaps between 2- and 5-year flows impacting SR203 and properties in City of Carnation. Levee impacts habitat.	Design and construct levee setback to increase sediment storage and floodwater conveyance; protect future development; reduce SR203 flooding and damages. County owns footprint; could expand.	TOTAL \$11.4M FCF: \$5M OTHER: \$775K in 2017 for design
F. Sediment Management in Leveed Reach Feasibility Study	Sediment accumulation increases levee overtopping and potential failure. Sediment redirects flow into levees causing erosion.	Conduct sediment management feasibility study. If feasible and warranted, develop and implement sediment management plan.	TOTAL \$500K FCF: \$500K
G. No Vista Property Acquisitions	Multiple properties at risk in flood hazard areas including deep and/or fast flows; landslide hazards can exacerbate flooding.	Acquire 15 remaining at-risk residences.	TOTAL \$5.6M FCF: \$1.3M OTHER: \$1.2M (in past)
H. Upper Free Levee Setback Design (Phase 1)	Levee overlaps between 10- and 25-year flows; levee directs flow and debris into trail bridge causing damage; potential flooding of adjacent residential area at 500-year flow.	Design levee setback to increase sediment storage and floodwater conveyance; protect adjacent development; reduce damage to trail bridge; city/county owns footprint.	TOTAL \$4.45M FCF: \$4.45M
I. Tolt River Road NE Improvements	Four sites flood between 10- and 100-year flows; at 100-year event 64 upstream homes are isolated by floodwater.	Feasibility, design and construction of road elevation projects at frequently inundated locations to reduce or eliminate isolation (if proved in phases).	TOTAL \$2.5M FCF: \$1.8M OTHER: TBD
J. Acquisitions to Support and Enhance Setbacks in Leveed Reach	Levees provide varying levels of protection and are vulnerable to future normal and land uses behind levees are at-risk.	Acquire properties if owners decide to put on market; focus on essential parcels for future setbacks in medium and long-term timeframe.	TOTAL \$3.5M FCF: \$1.2M OTHER: TBD
Proposed Medium Term Actions			
<i>(Unfunded Projects)</i>			
K. Upper Free Levee Setback Construction (Phases 2)	Levee overlaps between 10- and 25-year flows; levee directs flow and debris into trail bridge causing damage.	Construct levee setback. Add bridge spans under trail to provide connectivity between Lower and Upper Free levee setbacks.	TOTAL \$15M FCF: TBD OTHER: TBD
L. SR 203 Bridge Improvements Feasibility Study	SR 203 approach fills below flood flows. Highway overtop north of bridge and is subject to erosion and damage.	Study with potential future design/construct to add bridge spans, raise the highway and relocate KC trails, parking area downstream of SR 203.	TOTAL \$300K FCF: \$300K OTHER: TBD
M. Levee Setbacks	Levees provide varying levels of protection; are vulnerable to future, upstream impact habitat. County owns portions of footprint.	Feasibility, design, and construction of setbacks at three levees: Left Bank Downstream SR 203, Highway to Trail Bridge, and Girl Scout Camp.	TOTAL \$35M FCF: TBD OTHER: TBD
Proposed Long Term Actions			
<i>(Unfunded Projects)</i>			
N. Levee / Rerewetment Setbacks and Improvements	Levees / rerewetments provide varying levels of protection and impact habitat.	Feasibility, design and construction of 3 potential setback projects at Remington levee (west end), Redding levee and Escholtz levee (rerewetment).	TOTAL TBD FCF: TBD OTHER: TBD
O. Private Rerewetment Removal or Improvements	Existing privately constructed risk reductions provide varying levels of protection and impact habitat.	Remove or modify rerewetments to improve protection and/or reduce adverse impacts.	TOTAL TBD FCF: TBD OTHER: TBD

Nov. 12, 2016 draft

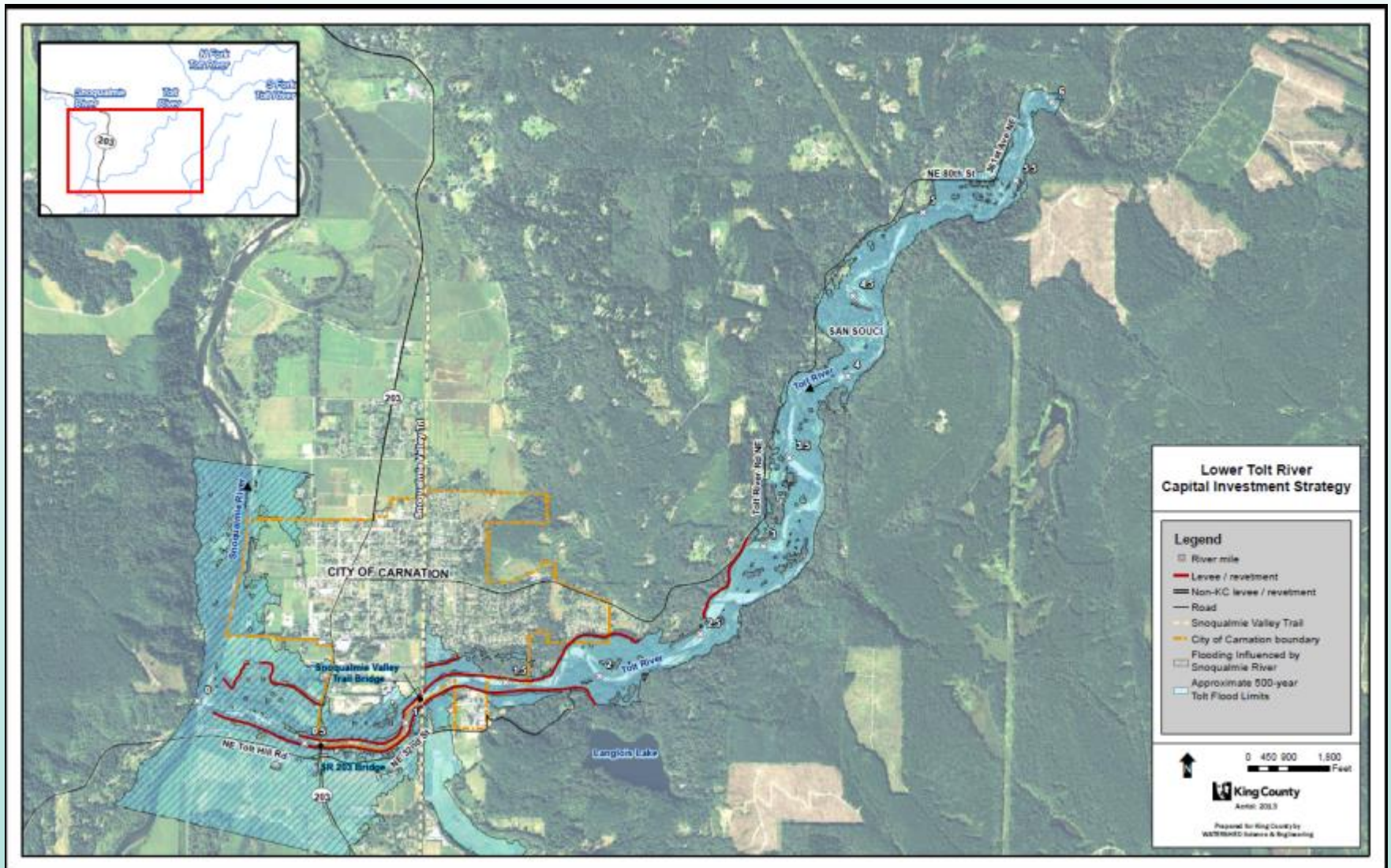
*Need from current 6-year CIP; project will continue beyond 6 years and may need additional FCD funding.

Draft Solutions
Capital Investment Strategy

Where We Are In The Planning Process

- Existing conditions Completed
- Goals Adopted
- Public input Completed
- Draft Capital Investment Strategy In Process
- Public Input Here now!
- Finalize Capital Investment Strategy 2017

Tolt River Corridor Planning Area



Key Hazards

- Flooding
 - Deep and fast flow areas
- Channel Migration
 - Erosion
 - Avulsions
 - Levee/revetment breach
- Landslides



Levee breach (upriver from SR203)



SR 203 overtopping isolates Carnation



Channel migration (San Souci)

Alluvial Fan Reach Risks

- Public safety
- Private residences and businesses
- Key transportation infrastructure
- Developable land



January 2009

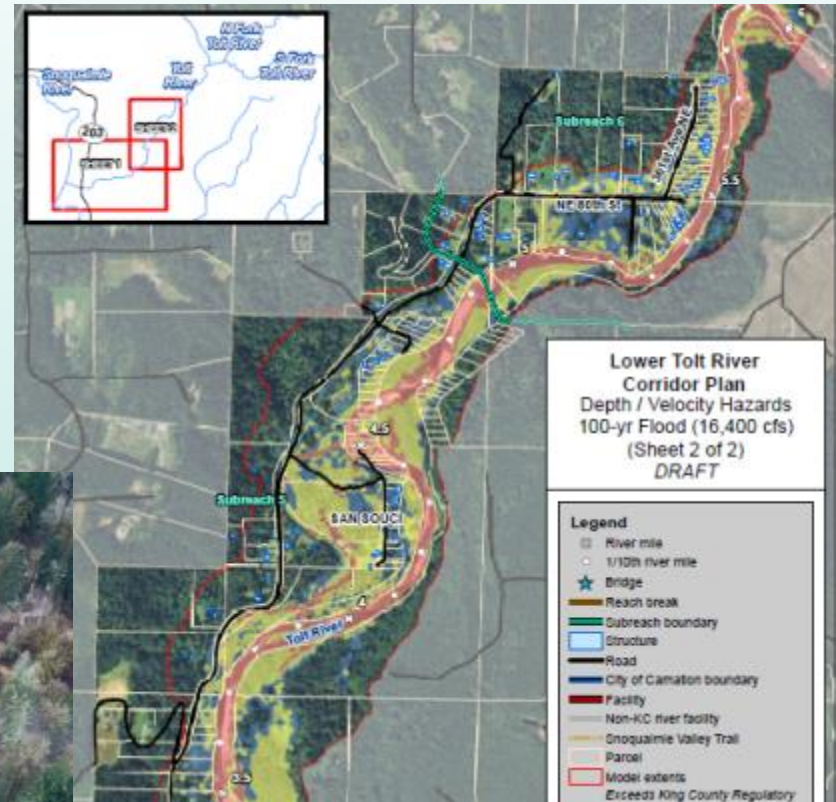
Levee breach and SR 203 flooding, Jan. 2009

Valley Reach Risks

- Public safety
- Private residences and businesses
- Road over-topping and isolation



January 2015

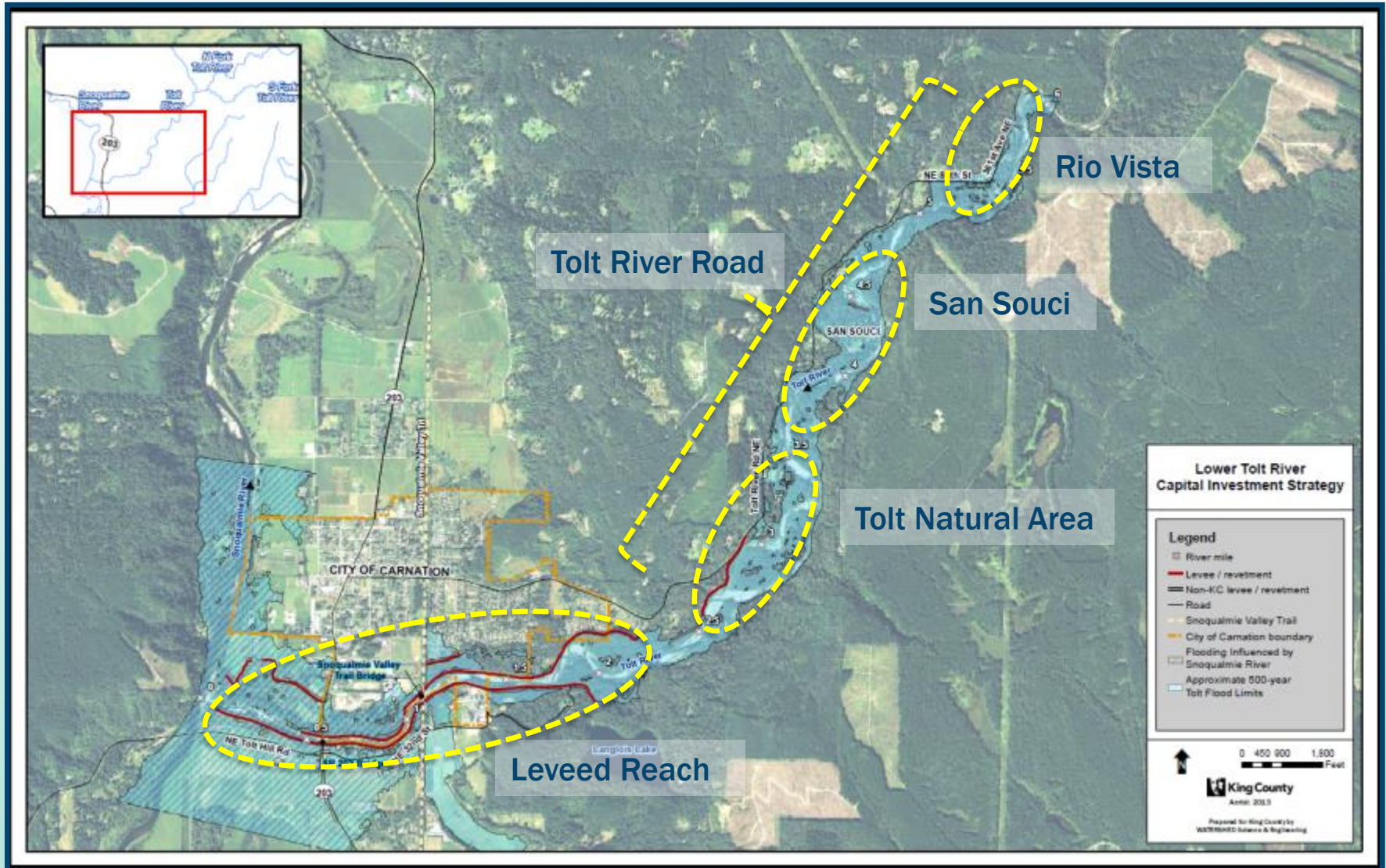


Map of deep and fast flow areas

Key Findings In The Corridor

- For 100-year flood event:
 - 32 homes inundated
 - 21 homes subject to deep/fast flow
 - 64 homes isolated by road flooding
- Unstable Levees, do not contain floodwaters
- Hwy 203 and Tolt River Road NE subject to flood and erosion hazards
- Gravel build up worsening conditions
- Degraded habitat

Key Problem Areas



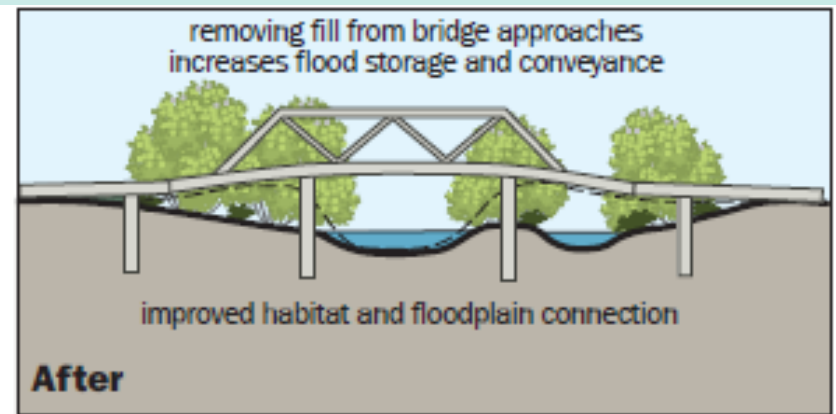
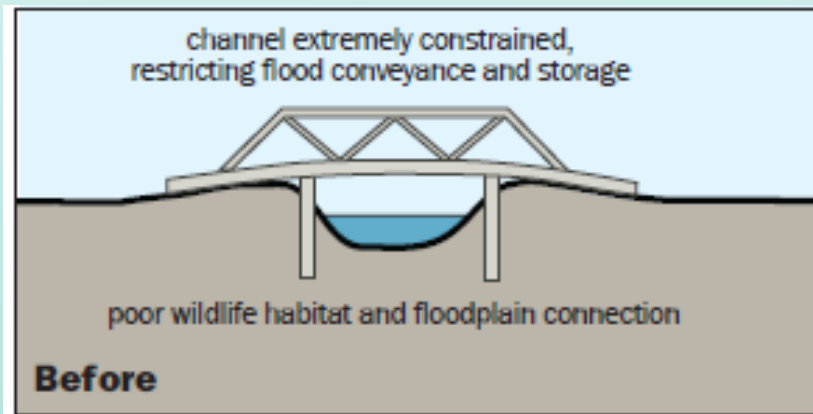
Potential Tools To Address Problem Areas

Alluvial Fan Reach:

- Maintain/repair levees
- Setback levees
- Manage sediment
- Modify bridges and roads

Valley Reach:

- Elevate roads
- Remove at-risk structures (voluntary sellers)



Bridge Improvements

Community Feedback

- Support for levee setbacks on public land that benefit private property and restore salmon
- Support for acquisitions, but county shouldn't force anyone to sell
- Support for and opposition to gravel removal
- Support for road elevations to improve access during floods

Community Feedback and Discussion

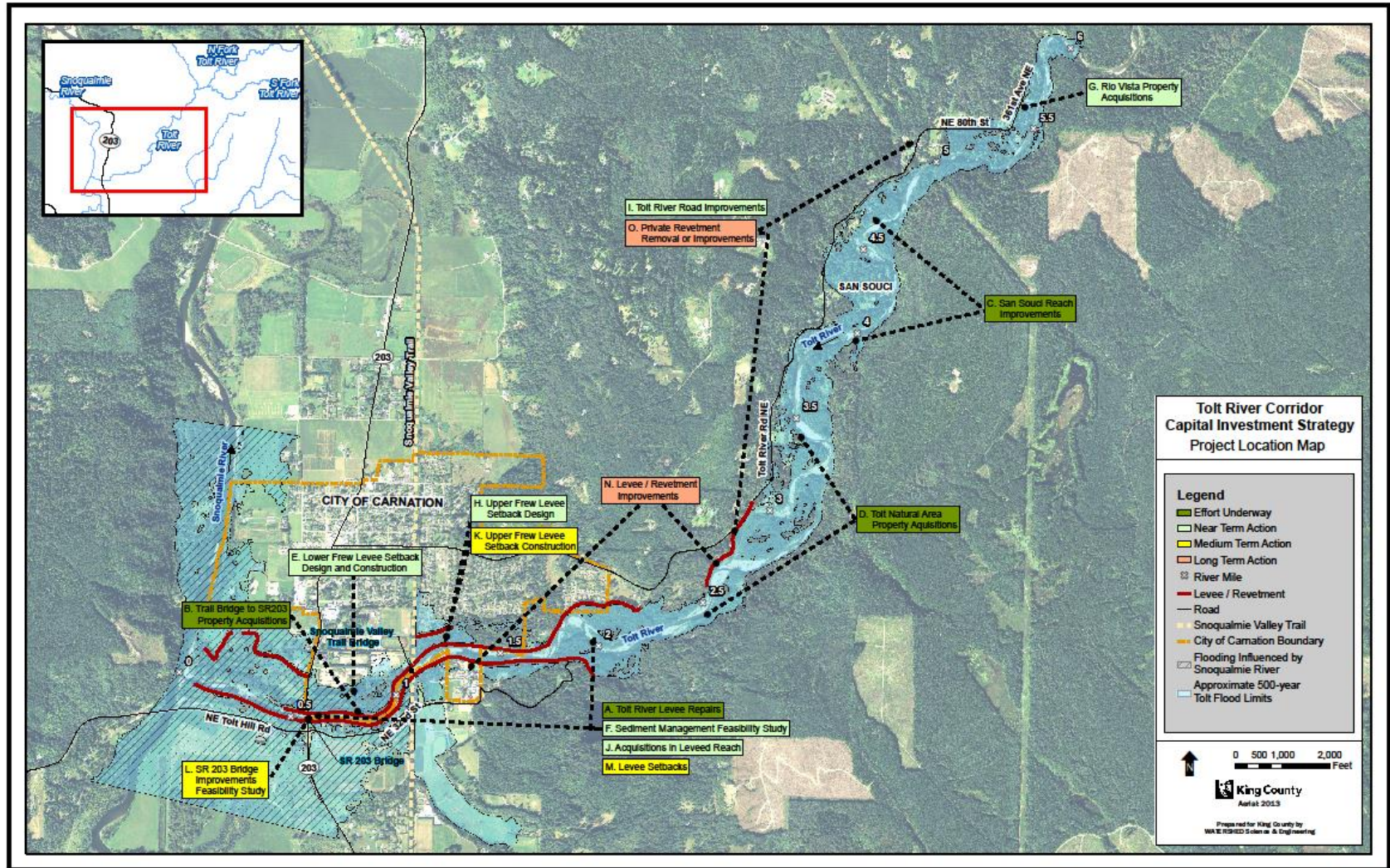
- Do the problems identified make sense to you?

Potential Solutions Based on FCD Criteria

- Severity of consequences
- Frequency of flooding
- Funding availability
- Potential funding partnerships
- Implementation readiness



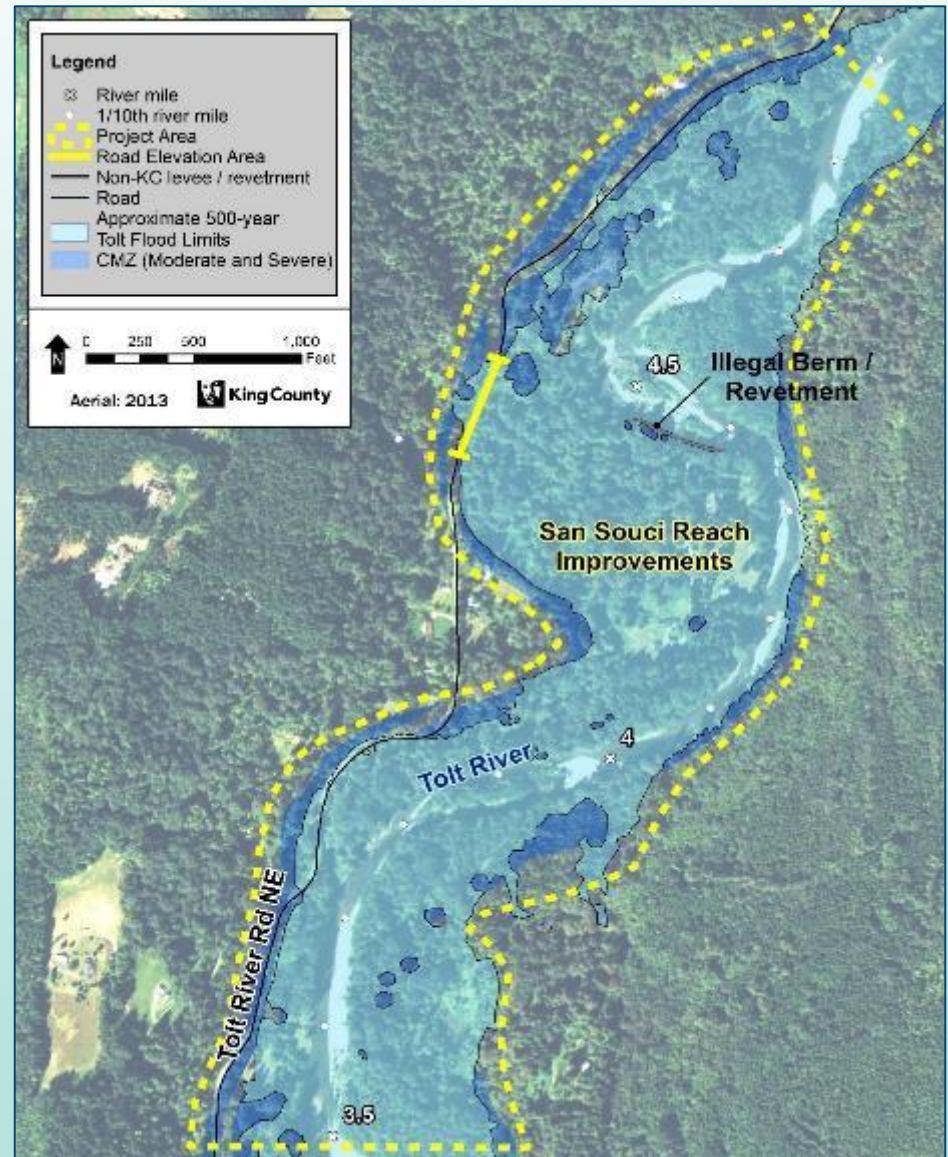
Draft Capital Investment Strategy



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Efforts Underway

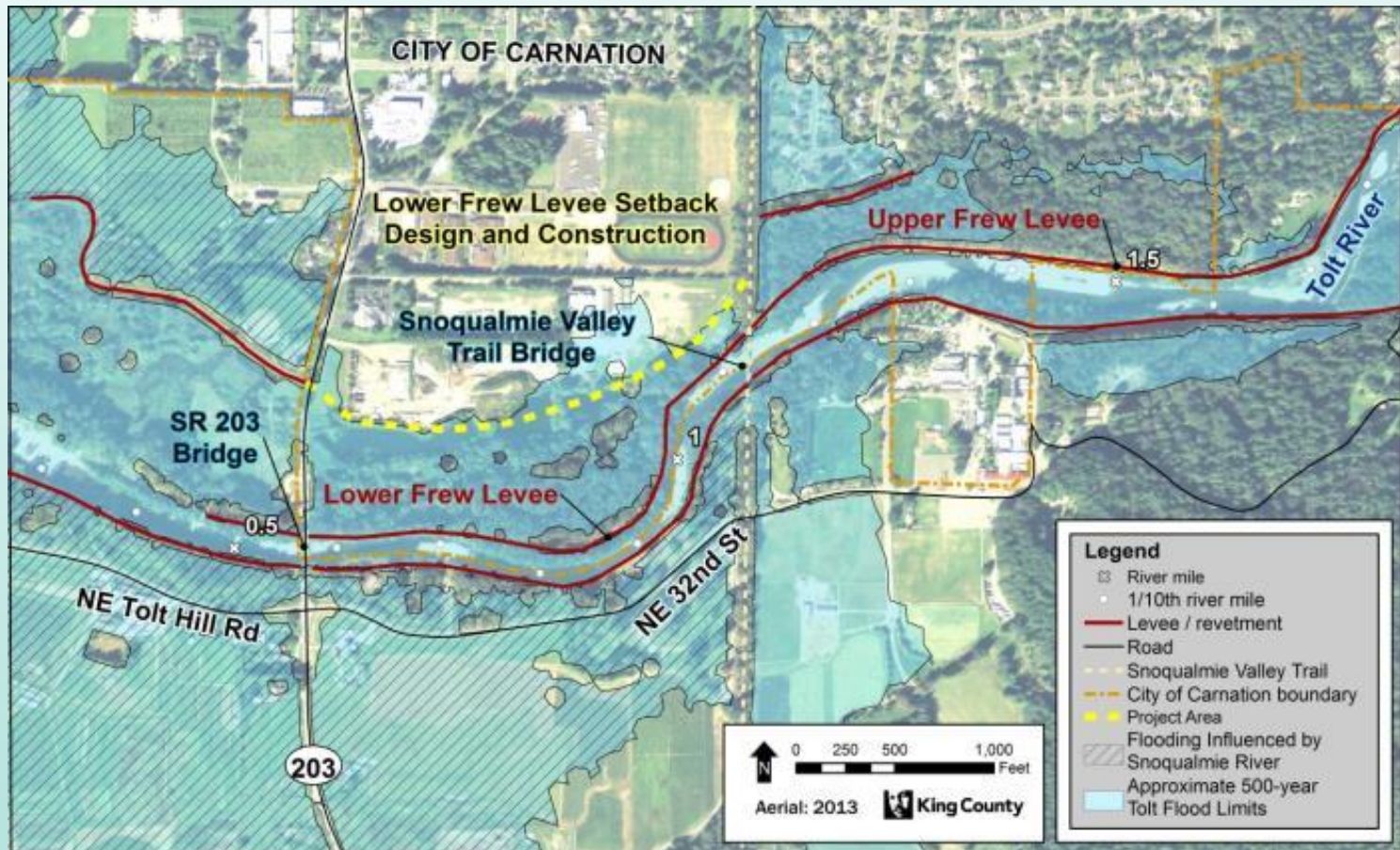
C. San Souci Reach Improvements and Road Elevations



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Near Term

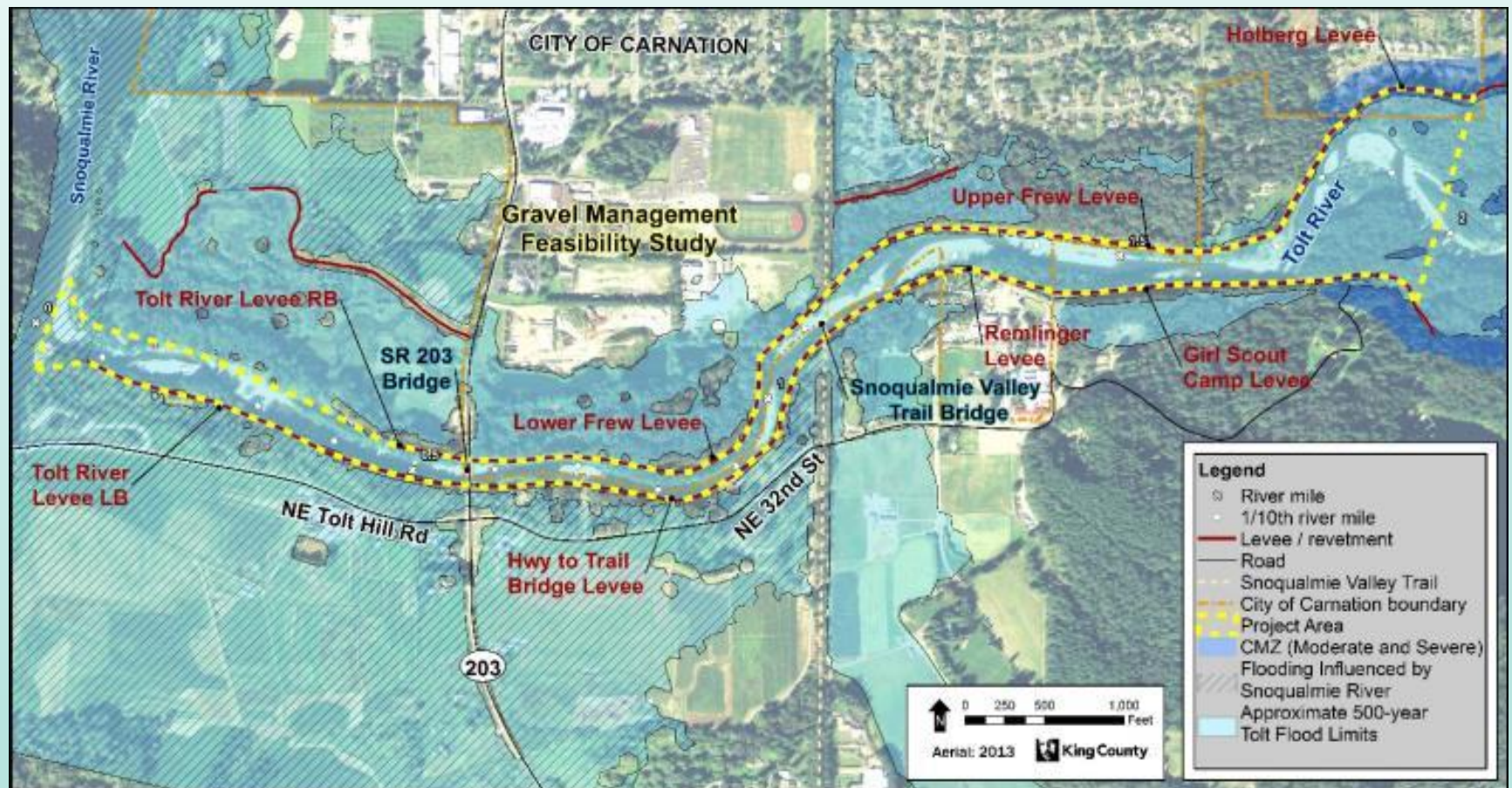
E. Lower Frew Levee Setback Design/Construction



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Near term

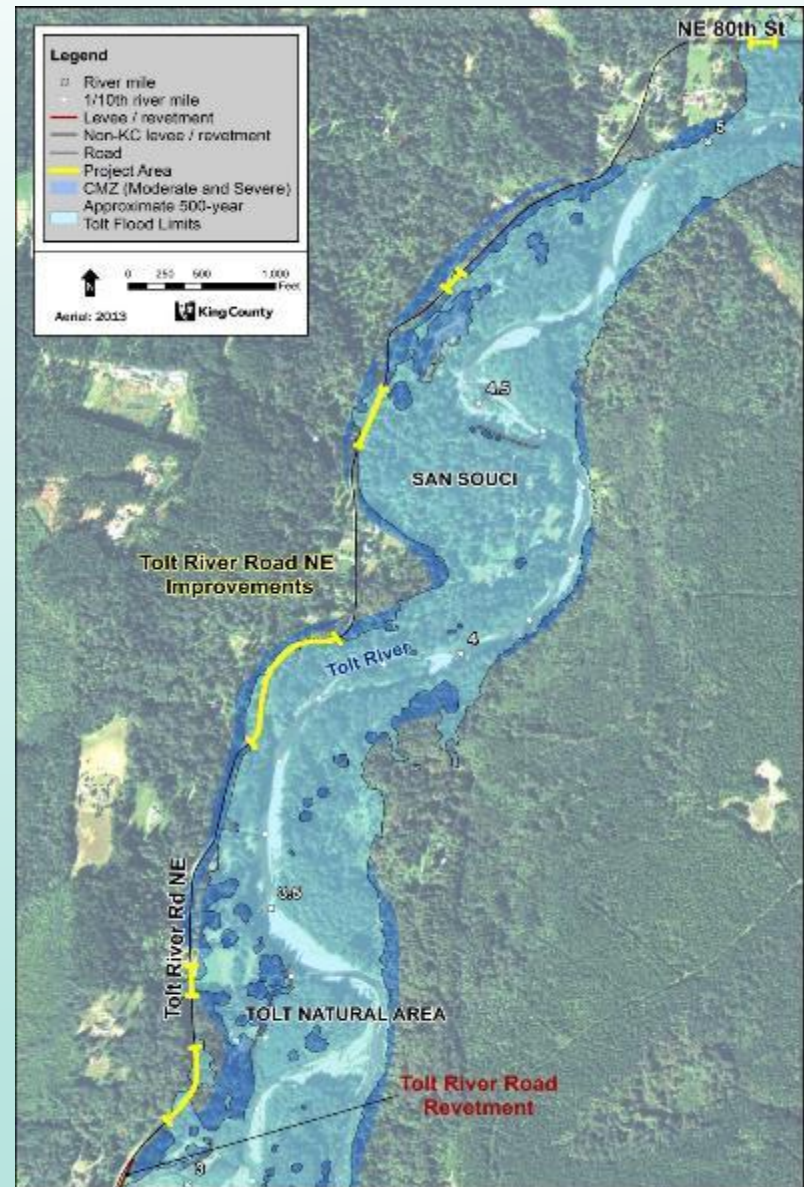
F. Sediment Management Feasibility Study



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Near Term

I. Tolt River Road NE Improvements



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Medium Term

Proposed Medium Term Actions			(Unfunded Projects)
K. Upper Frew Levee Setback Construction (Phase 2)	Levee overtops between 10- and 25-year flows; levee directs flow and debris into trail bridge causing damage.	Construct levee setback. Add bridge spans under trail to provide connectivity between Lower and Upper Frew levee setbacks.	TOTAL: \$15M - \$18M FCD: TBD OTHER: TBD
L. SR 203 Bridge Improvements Feasibility Study	SR 203 approach (fill) blocks flood flows. Highway overtops north of bridge and is subject to erosion and damage.	Study (with potential future design/construct) to add bridge span(s), raise the highway and relocate KC Parks parking area downstream of SR 203.	TOTAL: \$300K FCD: \$300K OTHER: TBD
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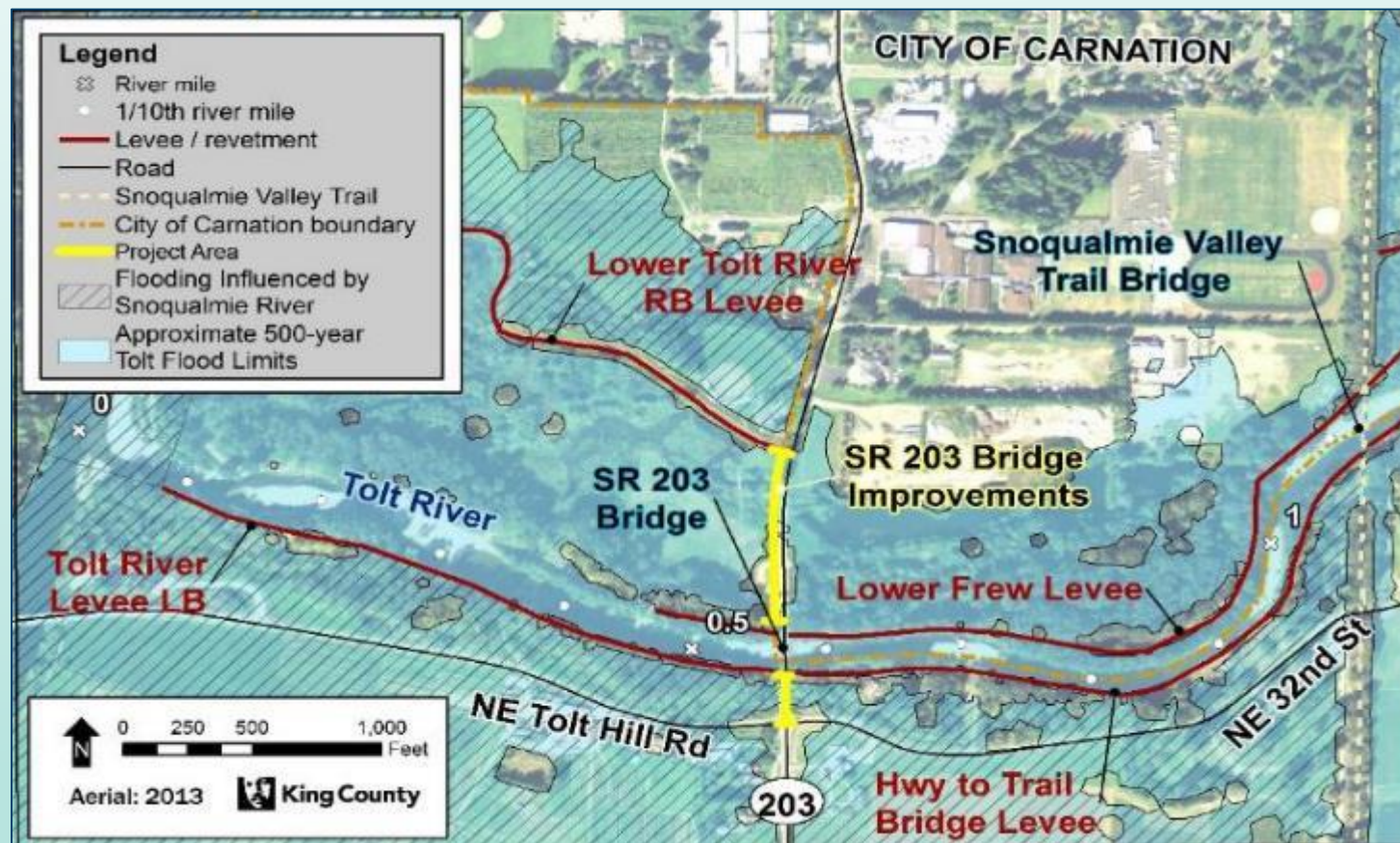
Long Term

Proposed Long Term Actions			(Unfunded Projects)
N. Levee / Revetment Setbacks and Improvements	Levees / revetments provide varying levels of protection and impact habitat.	Feasibility, design and construction of 3 potential setback projects at Remlinger levee (west end), Holberg levee and Edenholtm levee/revetment.	TOTAL: TBD FCD: TBD OTHER: TBD
O. Private Revetment Removal or Improvements	Existing privately constructed rock revetments provide varying levels of protection and impact habitat.	Remove or modify revetments to improve protection and/or reduce adverse impacts.	TOTAL: TBD FCD: TBD OTHER: TBD

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Long Term

L. SR 203 Bridge Improvements Feasibility Study



Community Feedback and Discussion

- Are these the right approaches?
- Are they sequenced about right?
- Do you have any concerns or questions?

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Next Steps:

- Share feedback with Flood Control District (FCD)
- FCD finalizes Capital Investment Strategy in 2017
- Begin implementation
- Evaluate “level of service” for levees
- Incorporate into 2018 Flood Plan update

Related Initiatives:

- Landslide hazard mapping
- Channel Migration Zone update – outreach in 2017

Contact Information

Chase Barton, Interim Supervising Engineer

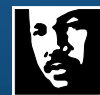
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